

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:  
**MOREAUX ET AL.**

Serial No. **Not Yet Assigned**

Filing Date: **Herewith**

For: **CIRCUIT FOR THE DETECTION  
OF A DEFECTIVE POWER  
SUPPLY CONNECTION**

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BOX PATENT APPLICATIONS, ASSISTANT  
COMMISSIONER FOR PATENTS, WASHINGTON,  
D.C. 20231.

EXPRESS MAIL NO: EL747059847US

DATE OF DEPOSIT: January 29, 2002

NAME: Dawn Kimler

SIGNATURE: *Dawn Kimler*

PRELIMINARY AMENDMENT

Director, U.S. Patent and Trademark Office  
Washington, D.C. 20231

Sir:

Prior to the calculation of fees and examination of  
the present application, please enter the amendments and  
remarks set out below.

In the Drawings:

Submitted herewith is a request for a proposed  
drawing modification as indicated in red ink to label the  
blocks in FIG. 1.

In the Claims:

Please cancel Claims 1 to 8.

Please add new Claims 9 to 33.

9. A detection device for detecting a defective  
power supply connection in an integrated circuit comprising at  
least one internal power supply line, at least one power

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In re Patent Application of:  
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supply pad connected to the at least one internal power supply line and to be connected to an external device for receiving an external voltage, at least one input/output pad to be connected to the external device for receiving the external voltage, and a pull-up or pull-down device connected between the at least one input/output pad and the at least one internal power supply line, the detection device comprising:

a detection circuit for comparing voltage levels between the at least one input/output pad and the at least one internal power supply line for determining if the power supply connection with the external device is defective.

10. A detection device according to Claim 9, wherein said detection circuit comprises at least one comparison circuit for each power supply pad.

11. A detection device according to Claim 9, wherein said detection circuit comprises a comparison circuit connected between each respective power supply pad and a corresponding input/output pad.

12. A detection device according to Claim 11, wherein each comparison circuit comprises a first inverter having an input connected to the at least one internal power supply line, and another input connected to the at least one input/output pad for receiving power therefrom.

13. A detection device according to Claim 12,

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wherein said first inverter comprises at least one transistor having a low threshold; and wherein an output of said first inverter changes when a difference in voltage levels on the at least one internal power supply line and the at least one input/output pad is at least equal to the low threshold of said at least one transistor.

14. A detection device according to Claim 12, wherein each comparison circuit comprises a second inverter series connected with said first inverter, said second inverter having an output for providing a defective connection signal based upon a difference in the compared voltage levels.

15. A detection device according to Claim 9, wherein said detection circuit generates a defective connection signal for turning off at least a portion of the integrated circuit when a difference in the compared voltage levels exceeds a threshold.

16. An integrated circuit comprising:  
at least one internal power supply line;  
at least one power supply pad connected to said at least one internal power supply line, and to be connected to an external device for receiving an external voltage;  
at least one input/output pad to be connected to the external device for receiving the external voltage;  
at least one of a pull-up and pull-down device connected between said at least one input/output pad and said at least one internal power supply line; and

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a detection circuit for comparing voltage levels between said at least one input/output pad and said at least one internal power supply line for determining if a power supply connection with the external device is defective.

17. An integrated circuit according to Claim 16, wherein said detection circuit comprises a comparison circuit connected between each respective power supply pad and a corresponding input/output pad.

18. An integrated circuit according to Claim 17, wherein each comparison circuit comprises a first inverter having an input connected to said at least one internal power supply line, and another input connected to said at least one input/output pad for receiving power therefrom.

19. An integrated circuit according to Claim 18, wherein said first inverter comprises at least one transistor having a low threshold; and wherein an output of said first inverter changes when a difference in voltage levels on said at least one internal power supply line and said at least one input/output pad is at least equal to the low threshold of said at least one transistor.

20. An integrated circuit according to Claim 18, wherein each comparison circuit comprises a second inverter series connected with said first inverter, said second inverter having an output for providing a defective connection signal based upon a difference in the compared voltage levels.

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21. An integrated circuit according to Claim 16, wherein said detection circuit generates a defective connection signal for turning off at least a portion of the integrated circuit when a difference in the compared voltage levels exceeds a threshold.

22. A smart card comprising:

at least one internal power supply line;

at least one power supply pad connected to said at least one internal power supply line, and to be connected to a card reader for receiving an external voltage;

at least one input/output pad to be connected to the card reader for receiving the external voltage;

at least one of a pull-up and pull-down device connected between said at least one input/output pad and said at least one internal power supply line; and

a detection circuit for comparing voltage levels between said at least one input/output pad and said at least one internal power supply line for determining if a power supply connection with the card reader is defective.

23. A smart card according to Claim 22, wherein said detection circuit comprises a comparison circuit connected between each respective power supply pad and a corresponding input/output pad.

24. A smart card according to Claim 23, wherein each comparison circuit comprises a first inverter having an input connected to said at least one internal power supply

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line, and another input connected to said at least one input/output pad for receiving power therefrom.

25. A smart card according to Claim 24, wherein said first inverter comprises at least one transistor having a low threshold; and wherein an output of said first inverter changes when a difference in voltage levels on said at least one internal power supply line and said at least one input/output pad is at least equal to the low threshold of said at least one transistor.

26. A smart card according to Claim 24, wherein each comparison circuit comprises a second inverter series connected with said first inverter, said second inverter having an output for providing a defective connection based upon the difference in voltage levels.

27. A smart card according to Claim 22, wherein said detection circuit generates a defective connection signal for turning off at least a portion of the smart card when a difference in the compared voltage levels exceeds a threshold.

28. A method for detecting a defective power supply connection in an integrated circuit comprising at least one internal power supply line, at least one power supply pad connected to the at least one internal power supply line, at least one input/output pad, and a pull-up or pull-down device connected between the at least one input/output pad and the at least one internal power supply line, the method comprising:

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providing an external voltage to the at least one power supply pad and to the at least one input/output pad; and comparing voltage levels between the at least one input/output pad and the at least one internal power supply line for determining if the power supply connection with the external device is defective.

29. A method according to Claim 28, wherein the comparing is performed for each power supply pad.

30. A method according to Claim 28, wherein the comparing is performed by a comparison circuit connected between each respective power supply pad and a corresponding input/output pad, and wherein each comparison circuit comprises a first inverter having an input connected to the at least one internal power supply line, and another input connected to the at least one input/output pad for receiving power therefrom.

31. A method according to Claim 30, wherein the first inverter comprises at least one transistor having a low threshold; and wherein an output of the first inverter changes when a difference in voltage levels on the at least one internal power supply line and the at least one input/output pad is at least equal to the low threshold of the at least one transistor.

32. A method according to Claim 30, wherein each

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comparison circuit comprises a second inverter series connected with the first inverter, the second inverter having an output for providing a defective connection based upon a difference in the compared voltage levels.

33. A method device according to Claim 28, further comprising generating a defective connection signal for turning off at least a portion of the integrated circuit when a difference in the compared voltage levels exceeds a threshold.

**REMARKS**

It is believed that all of the claims are patentable over the prior art. For better readability and the Examiner's convenience, the newly submitted claims differ from the translated counterpart claims which are being canceled. The newly submitted claims do not represent changes or amendments that narrow the claim scope for any reason related to the statutory requirements for patentability. Accordingly, after the Examiner completes a thorough examination and finds the claims patentable, a Notice of Allowance is respectfully requested in due course. Should the Examiner determine any minor informalities that need to be addressed, he is encouraged to contact the undersigned attorney at the telephone number below.



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Respectfully submitted,

*Michael W. Taylor*

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SUBMISSION OF PROPOSED MODIFICATIONS TO DRAWINGS

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Washington, D.C. 20231

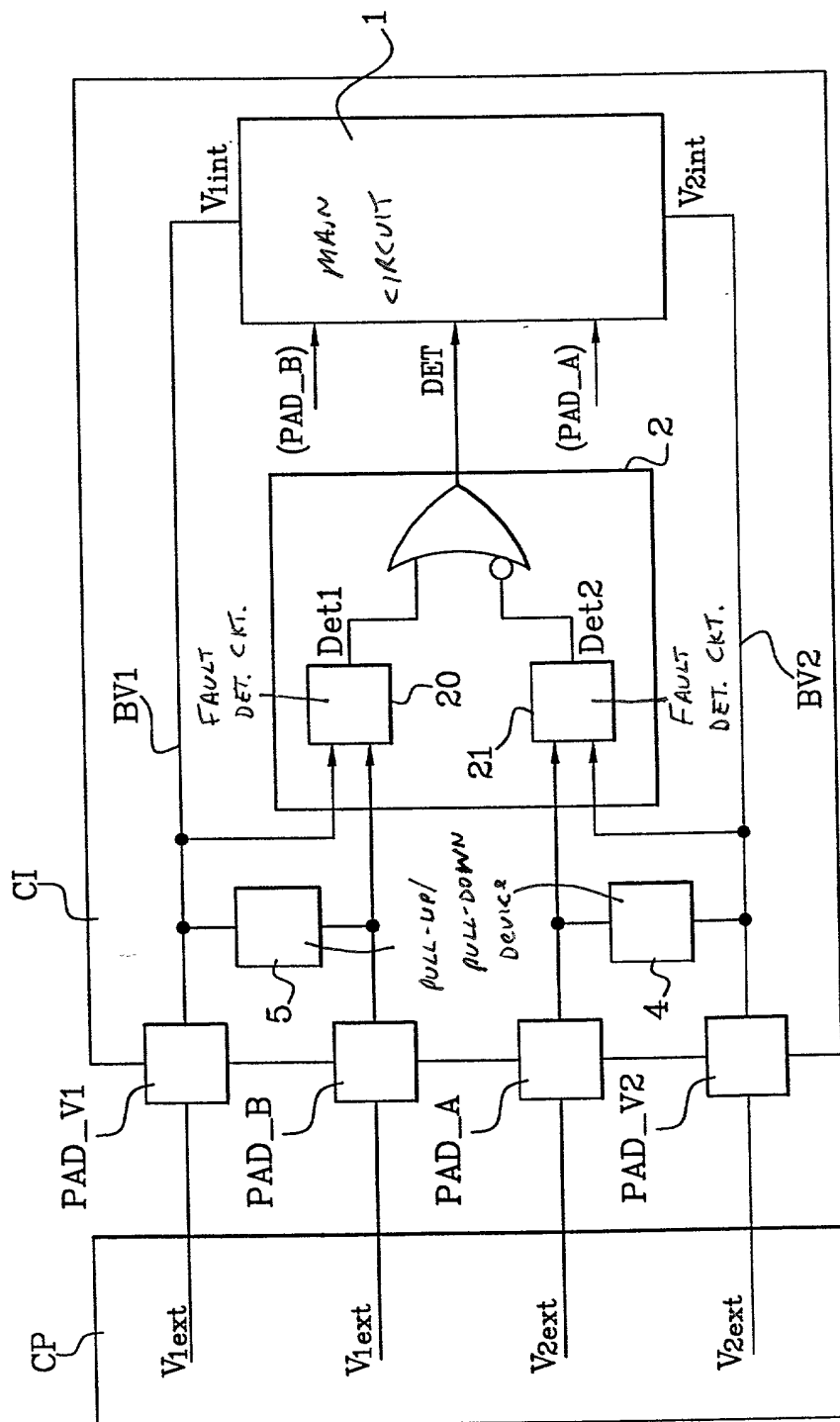
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Respectfully submitted,

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2005-01-29 10:00:00



**Fig. 1**